

**Meeting Notes**  
**Briefing on Citrus Greening**  
**September 8, 2005 – 10:00am**  
**Ben Hill Griffin Auditorium**  
**UF – IFAS - CREC**  
**700 Experiment Station Road**  
**Lake Alfred, Florida**

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Richard Gaskalla opened the meeting and thanked all the attendees and those listening by conference phone for participating (a list of attendees is attached). This meeting is an initial effort following the detection of citrus greening disease in southern Miami-Dade County to gather as much information about this disease situation as possible so that some preliminary decisions can be made. Richard complimented the joint USDA and FDACS CAPS (Cooperative Agricultural Pest Survey) team that discovered the disease. It is planned that following this meeting a technical advisory task force and science advisory panel will be formed to guide the regulatory response, but also this meeting is designed to start forming some groups to obtain answers needed for this response.

Richard then called on Susan Halbert and Xiaolan Sun to give the group an overview of the current situation. (See attached PowerPoint)

**Current Distribution**

Susan Halbert reminded the attendees that the Asian citrus psyllid (ACP) was introduced into the United States in 1998. It was initially detected in the Delray Beach, Florida and quickly spread throughout the state. This psyllid transmits citrus greening (CG). Dr. Halbert found two instances of CG eighteen miles apart from one another in south Miami-Dade County, Florida.

The cooperative federal and state CAPS team, USDA SITC (Smuggling Interdiction and Trade Compliance) and selected entomologists were conducting a targeted survey on farms owned by people from countries where citrus greening is established since these properties may contain imported plant material.

The disease was found initially on a pummelo on the Li Farm near Florida City. The suspect tree subsequently tested positive, and had symptoms of yellow shoots with a lot of defoliation and mottling. Chlorotic symptoms are white in South Florida likely due to the poor soil conditions. They also saw fruit symptoms such as lopsided fruit. This pummelo was reportedly a gift from another local farmer who air layered several trees, but the parent tree and all trees within 1900 feet had been removed by the Citrus Canker Eradication Program. They also found a suspect sour orange tree in the Palm Bay area of South Miami near a hotel where the group was staying. This was 18 miles north of the Li Farm. During the survey they even noticed significant symptoms in lime, even though some say it tolerates the disease. A subsequent trip following the diagnosis detected the

disease on a property adjacent to Li Farm and on other properties surrounding both finds. The group had some general observations about the current citrus greening outbreak:

- Greening is well established in South Miami-Dade County.
- Some plants infected are obvious.
- Our strain is hard on pummelos, grapefruit, and limes.
- Symptoms are more obvious in pummelo than oranges.
- High suspect plants are scattered within a square mile area in the Palmetto Bay area of South Miami.
- Greening is in several cultivars – pummelos, oranges, grapefruit, kumquats, lime, maybe others.

In Brazil the disease has spread to 200 square miles. It appears that it was moved on infected citrus plants planted in groves. It's essential to keep this disease out of the nurseries. Greening is very insidious and easily propagated. African citrus psyllids can fly about .9 miles, that's about 6.8 times the area for canker. There is no specific research on the distance that Asian citrus psyllids can fly. Susan said if we can get rid of insect vectors, we may not have to cut down as many trees.

Richard Gaskalla asked with what we have seen, how long has it been here? Susan Halbert replied the psyllid has been here since 1998, and there are a lot of psyllids in Dade County, but the greening organism at least for 3-4 years maybe longer. The psyllid spread around the state on orange jasmine plants, and almost all new county records were in discount stores such as Wal-Mart.

Phil Berger questioned the amount this psyllid could transmit greening from asymptomatic plants. Susan Halbert said there is not much information in the literature, but it is hard to find greening in asymptomatic plants. She also knows that air layers of the parent plant of the Li Farm pummelo had been made before the removal of the citrus within the canker arc.

Psyllids were collected from a property adjacent to the Li Farm on a sour orange hedge. These psyllids subsequently tested positive.

There was some discussion about the psyllid trapping program around the state and the best trap height. Carl Childers said they get more at ½ meter trap height since the psyllids are poor flyers - hurricanes may have moved them.

### **Current Distribution Continued**

Xiaoan Sun reported that they had trained 10 survey teams of citrus canker inspectors. They were sent to the area yesterday and collected 71 samples, but these are people without much training. Susan Halbert screened the 71 samples and thinks there are 10 high suspects.

Joel Floyd asked about the type of farms. Xiaoan Sun explained they are not citrus farms, but do have some citrus. One is a longan farm. There is a nursery close to the

possible source tree that has a lot of orange jasmine (the preferred host of the Asian citrus psyllid). Keremane Manjunath asked if Susan Halbert collected Asian citrus psyllid from orange jasmine. She said yes that orange jasmine is not often sprayed.

Phil Berger asked if orange jasmine is as a host of greening. Susan Halbert said in some places like Brazil it is, but not Asia. We took orange jasmine samples but they were negative. Carl Childers asked are you going to continue to check nurseries for greening. The response was yes.

Russ Bulluck asked where citrus canker arcs were and Greg Monaghan summarized the Citrus Canker Eradication Program (CCEP) and said current survey and control efforts were concentrated in North Broward and Palm Beach Counties. We have not done much work lately in Miami-Dade County and many of the canker control arcs were reset as part of the law suit. However, canker infected trees in this area will likely be found and the arcs reestablished. Mike Shannon asked about hosts that are not removed as part of CCEP; would these be a problem? Yes, Chinese box thorn and lime berry are the key problems.

Jim Graham asked have we seen aborted seeds. Susan said yes, in grapefruit and oranges.

### **Diagnostics**

Bruce Sutton summarized the diagnostic process. We looked at some samples a few weeks earlier that were negative. (See Attached Presentation)

Osama El-Lissy asked what other properties were positive. A sour orange hedge .2 miles west of Li Farm.

Dean Gabriel asked if they had sequenced psyllids and Bruce Sutton said no but we are working on it.

Phil Berger asked about genetic material for Africanus. Bruce Sutton said he did not have any; also nothing positive from Brazilian psyllids yet.

Richard Gaskalla asked if we are certain we have the Asiatic form or strain of the disease. Yes

Tim Gottwald states that based on Bove' work on psyllids the USDA did groups of 20 psyllids. They got a 100-1 ratio of Asian to African, but now Asiaticus is increasing to 60/40%. It's hard to compare Brazil with what is here.

Phil Berger asked how many samples will be generated over time. A limiting factor is DNA extraction. Wayne Dixon said that would be addressed in the very near future.

### **Survey and Detection**

Greg Monaghan and Paul Hornby were called to give an update on the current survey work. They reported that in there were 10 survey crews comprised of personnel from CCEP, PPQ Miami Plant Inspection Station, and FDACS-DPI conducted comprehensive door-to-door surveys in two square mile sections (55-40-15 & 55-40-22) in the residential area of the Palmetto Bay. 121 properties were surveyed yielding 71 suspect samples. FDACS-DPI Pathologist and Entomologist further screened the samples and noted 5 high suspects. Two Florida CAPS (FDACS-DPI & PPQ) Survey Specialists served as QA (quality assurance) rovers to manage the survey activities and assist in screening samples taken in the field. Surveys are scheduled to continue in surrounding sections. FDACS-DPI Pathologist and Entomologist surveyed areas in Florida City in and around the two existing positive sections. Survey results turned up high suspects in 3 additional neighboring sections. These surveys were conducted in a more rural area encompassing small farms and some larger acreage residential sites. The FDACS-DPI Hot Line (888-397-1517) has been activated. This number is being documented on our Florida CAPS door-hangers and left at surveyed residences where no one was home. The CCEP office in Cutler Ridge will serve as the initial command post to respond to this emergency. They are working to identify personnel to serve in the key ICS positions.

Tim Gottwald asked that since this organism is a select agent and we have a cumbersome property access protocol is there any difference where USDA/FDACS is concerned; can you enter properties without a search warrant? Richard Gaskalla said it did not matter for the state side, unless there are federal laws to consider. The laws pertaining to property access govern all programs. We can inspect a property with the resident's permission or if readily accessible. If there is a fence or the resident refuses, we must get a search warrant.

Matt Royer stated that the select agent list does not pertain to taking samples; it only applies to known possession of the agent. If you possess isolates, then you must have a permit.

Joel Floyd said there is no additional authority to enter properties. Richard Gaskalla asked has the FBI been engaged. Matt Royer states that the process for a select agent is that the USDA provides information to law enforcement, but USDA does not determine if it is a criminal act. They just turn over reports to IES (Investigative and Enforcement Services).

Richard Gaskalla asked Samuel Santiago from IES if he was getting the information needed to conduct investigations. Samuel Santiago said they will be working on this and reporting through their channel. They will be the contact for the FBI.

Paul Hornby reported that over the last 2 years they had been conducting a greening survey in Miami, Tampa and Orlando; 31 sections in each location, 203 inspections sites – used CCEP sentinel survey sites all outside of CCEP quarantine sites. They collected both psyllid and citrus samples. The Second Phase was called the Hot Zone Survey targeting locations in areas of high risk. They worked with SITC in South Florida to look at Asian farms with a potential history of importing illegal plant material. They also need

to look around Lake Okeechobee. These farms supply goods for local ethnic markets and in New York. Paul identified two action items:

- 1) Property access from a legal standpoint
- 2) Material coming into Florida from infected sources

Tim Gottwald said property access will directly impact the design of the sampling plan; another issue is what numbers of samples can be processed?

Mike Shannon asked how samples are handled. Richard Gaskalla said that there is a triage; people who know what this disease looks like must look at samples first.

Richard Gaskalla asked what should be our next 30/60/90 days? Wayne Dixon wants to know what the boundaries are for now – is it out 16 or 50 miles? You will have trees obviously infected, those that are not showing symptoms and then the psyllids.

Mike Shannon asked can we just look at psyllids. Mike Thomas said you need to do both.

Richard Gaskalla said we need a survey plan to tell us where leading front of the disease is. We need to work out nursery stock movement out of the area. Paul Hornby anticipates the need for a broader survey.

Tim Gottwald said that every time we look we will find trees that have been moved just like with citrus canker. Paul Hornby said that CAPS used property demographics to try to target those communities.

Richard Gaskalla said we must be able to justify the sequence of events as they unfold and that must be logical.

Tim Gottwald stated that in Brazil they had a focal point initially and it is now 120 miles. They had it there ten years – spread 12 miles a year minimum. He thinks the Miami infestation is not that old since trees aren't dead, but it likely has been there 3-5 years. If you multiply 5 years x 15 miles distance, it could be 75 miles from the find. We need to look north and south and it must be a systematic survey where we choose points and then delimit within. Eradication has never been done before. Every time it was not caught early enough to eradicate.

Richard Gaskalla asked are greening eradication standards comparable with CCEP? Should we move aggressively to cut there? Tim Gottwald: Absolutely.

Carl Childers said that you must spray first or you will spread vectors.

Russ Bulluck asked are alternate hosts going to be removed as part of the CCEP. No. Richard Gaskalla said what about spraying trees on residential properties? This is going to be problematic. Mike Shannon said that the Asian Longhorn Beetle Program uses injected insecticides. Harold Browning said psyllids will travel if there are no hosts.

Keremane Manjunath said the survey was designed when we did not have it. We are 3 years behind the symptoms. We must treat the plants and observe. Unless we use an insecticide, we cannot win. We are far behind the spread and we must target the survey toward psyllids. Plants should be sprayed before moved.

Richard Gaskalla said this will be impossible in residential areas of South Florida. Wayne Dixon asked if eradication is feasible with these constraints. Richard Gaskalla asked what the value of suppression to slow the disease is.

Carl Childers said in areas with greening, trees with symptoms must be removed if the industry is to remain viable. Tim Gottwald said that in Brazil, they remove trees with symptoms. If it is greater than 15%, they remove the entire grove, but it is not working. We are going to have to move faster.

David Hall said the survey plan must show valid evidence to growers that we are looking farther north. Osama El Lissy said there is a lot we do not know. We need to know the extent. Identify the largest possible area and look right away even if not statistically designed, then we can make decisions.

Dan Fieselmann said that the difference between Brazil and Florida is the hurricanes. What have the storms done to move the vector? Richard Gaskalla asked if we can train CCEP employees to look for the disease. Tim Gottwald said it would be very difficult since there are too many different symptoms that look like other maladies. It is a very indistinct disease to survey for. Susan Halbert said sometimes you see an obvious tree, but sometimes not.

Carrie Harmon said to look at Sudden Oak Death; we need to get more eyes on the ground. How many samples can we handle? Maybe labs can handle more samples and we will not need triage.

David Hall asked Tim Gottwald if symptoms formed quicker in young trees. Yes. Can we ask growers to look at young trees?

Richard Gaskalla said we need to do a delimiting survey and a statewide survey. It would be best to convene smaller group to work on a survey plan.

Tim Gottwald said we need to tap into the sentinel tree information and use the information from that to delineate. Greg Monaghan said we can use CCEP properties by STR, but we are just getting back in Dade County, so South Dade might be a problem. Do we want to do Township 52? Tim Gottwald said to use 10x10 mile area around each location (Queen's design) and do the outer most mile first and then move in for the first sweep. Then do second tier design after that.

Wayne Dixon asked Greg Monaghan when they would have a data set for Tim Gottwald. Greg Monaghan said by Monday. Someone asked about growers and will we do this as part of CCEP and grower self survey. There was some discussion about property access

issues. Greg Monaghan said in some areas such as Palm Beach they had 90% access but in Miami only about 28% because of so many fenced and gated yards.

Tim Gottwald took samples of CTV from this same area and sent them to Peggy Sieburth. We probably have a stem pitting isolate of CTV down there – another exotic agent from Asia but easier to find in field. Peggy Sieburth said all 4 samples show positive for stem pitting.

Russ Bulluck said public relations will be very important.

Richard Gaskalla appointed the following working group:

Survey Issues Working Group:

Richard Clark, Wayne Dixon, Paul Hornby, Greg Monaghan, Tim Gottwald, Dan Fieselmann, Eduardo Varona, David Hall

**Regulatory Issues/Questions**

Joel Floyd worked with Conrad Krass on an action plan but it is just a rough draft and there are many errors that need to be corrected. Mike Shannon said that if we do not have scientific data to take exposed trees, assuming alternate hosts aren't a reservoir, we just should take out trees based on canker arcs. We can't afford to wait on research and alternate hosts. Richard Gaskalla said to start looking in nurseries in areas with positives and testing their other hosts. Susan Halbert said that Rayanne Lehman might be a good resource since plum pox is a similar issue. Tim Gottwald said that he is on the plum pox scientific panel. They used a 1600' radius similar to what CCEP is doing, but this is not used in Canada. Harold Browning said to take care of positive trees right away and that gets us closer to fighting this.

Tim Gottwald said that like we originally suggested with the CCEP, we should just buy the trees and be done with it. We need to revisit this. Keremane Manjunath said that Brazil would be glad to host a group. Richard Gaskalla said that regarding orange jasmine and other hosts, we need to park this until there is more research because we will need answers. Mike Shannon and Susan Halbert talked about transovarial transmission of greening from female psyllids to offspring. There is some indication that this can occur.

Richard Gaskalla appointed the following work group:

Nursery stock/ quarantine Issues Working Groups:

Richard Clark, Chair with assistance from staff Ann Wildman, Susan Halbert, Ben Bolusky, Joel Floyd.

**Vector Control /Action Plan Status**

Joel Floyd said there is a list of pesticides that are registered – 10 or 12. Richard Gaskalla asked Ed Burns to look into this and Ed called on Carl Childers who said there are Imidacloprid products, Danitol, (restricted use) and dimethoate all labeled for psyllid control.

Carl Childers said Danitol is an excellent product; it is registered and has good knock down and good residual. Imidacloprid is good, but slow acting therefore may not be the best choice for residential trees as a stand-alone treatment. Carl Childers said that some of the other Nicotinoids are not all that effective. Provado (imidacloprid) is used according to Susan Bright. Harold Browning pointed out that these labels are not used in residential areas. Ed Burns said we also need something for nurseries. Susan Bright expressed concern that Danitol is very hot and does well for knockdown but is not persistent.

Susan Halbert asked about trunk applications. Harold Browning said no companies are interested in this. Bayer is not interested. Susan Halbert asked about biocontrol. That will be helpful. Tim Gottwald said tanglefoot would be good for keeping the psyllids from flying away.

Richard Gaskalla appointed the following working group:

Pesticide Issues Working Group:

Carl Childers and Ed Burns, Co-chairs; Michael Rodgers, Ed Burns, Susan Bright and Amy Rhoda. Wayne Dixon would like a table.

**Research Needs**

Mike Kesinger said that we need to better protect the budwood sources. We need regulatory authority to require screening in all commercial citrus nurseries.

Peggy Sieburth said we need to have a way to test non-symptomatic plants, particularly in nurseries since there is some evidence that this can be done.

Everyone should funnel information to Richard Gaskalla and Mike Shannon.

Ron Brylansky said that John Hartung has inoculated Murraya material and he has requested material from APHIS. Tim Schubert said this has been sent. Harold Browning said that before we develop a comprehensive research needs list we need to know where anyone can work with this, probably not in Florida.

Dean Gabriel said they have select agents at his lab in Gainesville. He has asked if he can get a liquid cultivar from China. He doesn't want plants. APHIS could approve. He is getting an application to them.



Mike Thomas said you should be able to keep it as long as you keep the vectors under control. A long-term project should be to determine the length of time between infection and when it can be recovered by PCR. Dean Gabriel said that we need more types of tests. Move PCR from confirmation after symptoms to something you can use before symptoms. He thinks that this needs to be expedited. He said a culture of the select agent has to be destroyed in seven days, but Matt Royer said you can get permission to work with it.

Dean Gabriel said some of this could be known in two weeks, but some may take a year. Short term we need strategies for survey and detection. We also need to run Kochs Postulates and do bio-indexing. For the long term we need seed extraction and vector biocontrol.

Osama El Lissy asked a question about the efficacy of the vector control. Harold Browning said that we just have a list for now. Tim Gottwald is working in Brazil now; studying rate and patterns of spread. There are 140 plots for control strategies. He thinks that long term they might use Murraya as a trap plant around the grove and kill psyllids on the trap plants.

Ron Brlansky said that using trap plants as indicator plants might be good. Gail Wisler asked if greening can be cultured. Dean Gabriel said Ping had information on that. Some researchers in China claimed to have done this but it grew fast in culture so they may not have done it (fastidious bacteria do not grow quickly). Ping said he thinks they have done this but he doesn't know the media. Ron Brlansky said that Mike Davis with UF in Homestead cultured *Xyllella fastidiosa*. He is working with John Hartung.

Ed Burns asked if there are better traps for the psyllids. David Hall says they are collecting a lot in yellow sticky traps. They do not draw in specimens.

David Hall stated that research is needed on semiochemicals, attractants, migration movement studies, foreign exploration for new natural enemies, confirmation of transovarial transmission of greening in the vector.

Joel Floyd asked if fruit can transmit the disease. Not likely. We are not regulating it.

Peggy Sieburth said look for entomophagous fungi.

Richard Gaskalla said that a Science Advisory Panel will be appointed to develop a list of research issues and begin to help answer the many questions there are surround the greening issue.

A preliminary list of the research needs is attached.

## **Public Outreach**

Denise Feiber reported that we have a pest alert and a circular and the press release with first find information. Tim Gottwald and Richard Gaskalla spoke to Indian River Citrus League yesterday about Citrus Greening.

Wayne Dixon asked about the type of questions surveyors were getting? Xiaoan Sun said just basic information.

Denise Feiber said that we need to fast track outreach with effective strategies and educate the helpline right away and pull in stakeholder groups to get input. How can the public help us? Door hangers, brochures, etcetera; we'll be doing that within the next week. Mike Hornyak said we need to stress that the fruit is inedible and that the trees will die.

Richard Gaskalla asked can we link this with the canker message. Tim Schubert said we need to be up front about it.

Dean Gabriel said that we need to manage people's expectations, particularly the industry. You may not be able to eradicate it; you may need to suppress it. If it has gotten out, forget it.

Richard Miranda said that the public view us as the evil state group. Part of the plan needs to be to bring in Miami/Dade County, then DERM. We need to have a county biologist that we could educate. Richard Gaskalla said the message is that canker is very bad, but this (greening) will be catastrophic.

Gail Wisler said she will contact the various County Extension offices and other faculty members.

Matt Royer said that USDA can pay for printing of brochures. Harold Browning said this should be included with Master Gardener and Industry training on citrus canker.

Next Meeting: September 19, 2005 at 1:00 PM – same location following the morning meeting of the Citrus Canker Technical Advisory Task Force